

TECHNICAL MINIMUM SPECIFICATIONS:

Active Components		
Item No. 1.1 -Layer 3 Switch		
Sr. No.	Item	Qty.
1.1	General:	
	Make and Model Number with necessary brochures must be given	
	Chassis based switch	
	Inbuilt Redundant load sharing AC power supply	
	Redundant switching fabric	
	Switching backplane capacity of 480 GBPS or more	
	Forwarding rate 274 million pps	
	Forwarding mode Store and Forward	
	Number of Ports and Interface/Standard	
	Switch should be chassis based architecture	
	Switch shall be loaded with 24 # 10/100/1000 Base T Ports and 24 # MiniGBIC SFP ports	
	shall be loaded with min 2 # 10G ports	
	Compliant to IEEE 802.3ae compliance	
	IEEE 802.3 compliance	
	IEEE 802.3u compliance	
	Support full duplex operations LAN	
	IEEE 802.3x Flow Control support for Full-Duplex mode	
	Support Full-Duplex Operation only	
	Supports Wire speed Layer 3 switching	
	SFP Transceivers Supported:	
	1000SX/ LX/ LHX/ ZX / 100FX	
	MAC Addresses	
	Min 32K MAC address	
	Manageability:	
	SNMP v1, v2, v3, RMON (4 Groups), SIM Technology (Single IP Management) with IP clustering / Stacking support	
	Command Line, Web based Management, Port Mirroring and Syslog	
	TFTP based Firmware upgrade	
	DHCP server, Relay, Client.	
	Features	
	Layer 3 Switching and Routing	
	Spanning Tree Protocol (IEEE 802.1D, 802.1W and 802.1S)	
	VLAN Support (IEEE 802.1q support up to 4000 VLAN and 255 VLAN groups (Port Based/802.1p/GVRP/GARP)	

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	Broadcast / Multicast / Unicast Storm Control	
	Port/ MAC/ IP segment/ Protocol/ Private/ Vlan support	
	IGMP v1/v2/v3 and IGMP Snooping v1/v2/v3	
	Link aggregation as per IEEE 802.3ad with max 128 group trunk with max 8 ports for each trunk	
	Both static and dynamic link aggregation with load balancing	
	802.1p Priority (8 Queues), DiffServ QoS, Strict priority, WRR, SWRR	
	Hybrid queuing of Strict priority + WRR.	
	IEEE 802.1x, SSH, TACACS (+), RADIUS support, prevention for DOS attacks, ARP Inspection	
	Standard and Extended Access control, Time based ACL	
	RIP1/2, OSPF, BGP4, RIPv6, OSPFv3, BGP4+ for IPv6	
	PIM-DM, PIM-SM, PIM-SSM, PIM-SM/DM for IPv6	
	MLDv1/v2, MLD snooping V1/v2	
	VRRP, VRRP v3	
	IPv6 ready from Day 1	
	IPv6 Host / Management and IPv6 complete Routing from Day 1	
	Telnet Support for Management	
	Switch should contain following items:	
	Power cable	
	Null modem cable or equivalent console port to login to device for initialization	
	Rack-mount kit	
	Installation guide	
	Resource CD-ROM with User Manual	
Item No. 1.2 -24 Port Layer 2 switch (Gigabit Switch)		
Sr. No.	Item	Qty.
1.2	General:	
	Make and Model number with necessary brochures must be given	
	Rack-mount size	
	Number of Ports:	
	24 x 10/100/1000 Gigabit Ethernet ports, 4 shared SFP slots for 1000LH/LX /100FX fiber transceivers	
	IEEE 802.3 10BASE-T/802.3u 100BASE-TX/100FX	
	IEEE 802.3ab 1000BASE-T/802.3z 1000BASE-SX/LX	
	Stackable in nature with IP clustering	
	Static IP Routing	
	SFP Supports:	
	IEEE 802.3z 1000BASE-LX	
	IEEE 802.3z 1000BASE-SX	
	IEEE 802.3z 1000BASE-LH	
	VLAN:	

IEEE 802.1q tagged Port base VLAN	
Maximum number of VLANs per Device : Maximum 255 Static and 4K VLAN ID	
Private VLAN	
Priority Queues:	
Standard IEEE 802.1p	
Minimum 4 Queues	
SP, WRR queuing	
Access control and security:	
802.1x based port control	
MAC based port security through ACL	
Standard and Extended ACL	
Spanning Tree Protocol:	
802.1d Spanning Tree	
802.1w Rapid Spanning Tree	
802.1s Multiple Spanning Tree	
Port Trunk:	
802.3ad Compatible Link Aggregation (LACP)	
Ports per trunk : Maximum 8	
Trunks per Device : Maximum 32	
Operation Mode : Load Sharing	
Multicasting	
IGMP v1/v2/v3 Snooping	
Multicast VLAN registration	
Performance:	
Switch Fabric speed : Minimum 56 GBPS	
Packet Forwarding Rate : Minimum 38.6 Mpps	
Transmission Method : Store and Forward type	
MAC Address table : Minimum 8000	
IPv6 ready from Day1	
IPv6 Ping/tracert, Telnet, DNS Resolver, RADIUS, TACACS+, Syslog ,SNTP , NTP, FTP/TFTP sFlow	
IPv4/IPv6 Dual Protocol Stack (RFC2460), IPv6 Unicast and Multicast Address Types, IPv6 VLAN registration, ICMPv6 Redirect	
SNMP over IPv6, HTTP over IPv6, SSH over IPv6, DNS over IPv6, DHCPv6 Server	

Management Support:				
Trace Route command				
Single IP management V1				
DHCP Server / Client, DHCP snooping, DHCP Option 82.				
SNMP v.1,v2c,v.3				
RMON Monitoring				
Web Based Management				
Telnet Server				
Command Line Interface				
Switch should contain following items:				
Power cable				
Null modem cable or equivalent console port to login to device for initialization				
Rack-mount kit				
Installation guide				
Resource CD-ROM with User Manual				
Item No. 1.3 -Mini GBIC 1000LX transceiver port				
Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
1.3	Small Form Factor Pluggable module – Mini GBIC 1000 based LX module to support Gigabit speeds over 9/125 Single mode Fiber up to a distance of 10kms.	157		
Item No. 1.4 – RPS Power Supplies with Chassis for L3 Switches				
Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
1.4	Should provide power supply for more than 100 watts <i>(support equivalent to the power requirements of the core switches quoted for in the tender)</i>	8		
	Suitable for providing back up power for switch in case of failure of main power supply.			
	I/P voltage range of 115-203 VAC			
	I/P frequency range of 47-63 Hz			
	Chassis should allow 2 RPS modules to be deployed in standard rack.			
	RPS Modules installed in this chassis will be connected directly to AC			

Security Appliance		
Item No. 2-Gateway Security Appliance		
Sr. No.	Item	Qty.
2	General Specification	
	UTM should be fully featured with AV/AS/IPS/ContentFiltering and On Appliance reporting	
	Product or OEM should be ISO 9001-2008 Certified	
	OEM should have regional presence for sales & support	
	Proposed appliance should support storage of Logs & reports internally or externally.	
	Proposed solution should comply FCC and CE norms	
	The proposed solution should match following criteria.	
	a. Hardware platform must be 64 bit	
	b. Must be based on ASIC OR Multicore Parallel Processing Architecture	
	c. 8 number of 10/100/1000 interface with optional: 8 number 10/100 Switching ports	
	d. 15000 number of new connection	
	e. 500,000 number of concurrent connection	
	f. 5.0 Gbps Firewall throughput	
	g. 650 Mbps IPS throughput	
	h. 400 Mbps of VPN throughput	
	The proposed solution should have unrestricted user/node license.	
	The proposed solution must work as standalone HTTP proxy server with integrated Firewall, Anti Virus, Anti Spam, Content filtering, IPS.	
	The proposed solution must support User based policy configuration for security & internet management.	
	The proposed solution should provide on appliance reports based on user not only on the base of IP address.	
	Proposed appliance should support MIX mode deployment.	
	The proposed solution should have an option of inbuilt Web Application Firewall to protect web servers hosted in the network for protection against SQL Injections, Cross-Site Scripting (XSS), Session Hijacking, URL Tampering, Cookie Poisoning with Extensive reporting and Logging.	
	Administration, Authentication & General Configuration	
	The proposed solution should support administration via secured communication over HTTPS, SSH and from Console.	
	The proposed solution should be able to export and import configuration backup including user objects	
	The proposed solution should support Route (Layer 3)/transparent mode (Layer 2).	

	The proposed solution should support integration with Windows NTLM, Active Directory, LDAP, Radius or Local Database for user authentication.	
	The proposed solution must support automatic transparent Single Sign on for user authentication. SSO must be proxy independent and support all applications for authentication.	
	The proposed solution should support Dynamic DNS configuration.	
	The proposed solution should provide bandwidth utilization graph on daily, weekly, monthly or yearly for total or individual ISP link.	
	The proposed solution should provide real time data transfer/bandwidth utilization done by individual user/ip/application.	
	The proposed solution should support Parent Proxy with IP/FQDN support.	
	The proposed solution should support NTP.	
	The proposed solution should support user/ip/Mac binding functionality to map username with IP address & MAC address for security reason.	
	The proposed solution should have multi lingual support for Web admin console.	
	The proposed solution should support Version roll back functionality.	
	The proposed solution should support session time out & Idle time out facility to forcefully logout the users.	
	The proposed solution should support ACL based user creation for administration purpose.	
	The proposed solution should support LAN bypass facility in case appliance is configured in Transparent mode.	
	The proposed solution should support inbuilt PPPOE client and should be capable to automatically update all required configuration whenever PPPOE get changed.	
	The proposed solution should support SNMP v1, v2c & v3.	
	The proposed solution must be firmware based instead of normal software with capability to keep two firmware instant roll back.	
	The proposed solution must provide flexible, granular role-based GUI administration.	
	The proposed solution must provide support of multiple authentication servers for each module (Firewall, Different type of VPN)	
	The proposed solution must support of Thin Client (Microsoft TSE, Citrix) authentication and must be able to differentiate users coming from same IP address.	
	The proposed solution should support Guest user authentication through SMS	
	Multiple ISP load balancing and Failover	
	The proposed solution should support load balancing & failover for more than 2 ISP.	
	The proposed solution should support explicit routing based on Source, Destination, Username, Application.	

	The proposed solution should support weighted round robin algorithm for Load balancing.	
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	The proposed solution should provide option to create failover condition on ICMP, TCP or UDP protocol to detect failed ISP connection.	
	The proposed solution should send alert email to admin on change of gateway status.	
	The proposed solution should have Active/Active (Round Robin) and Active/Passive gateway load balancing and failover support.	
	High Availability	
	The proposed solution should support High Availability Active/Passive or Active/Active	
	The proposed solution should be ICSA certified High Availability solution.	
	The proposed solution should send notification to admin on change of appliance status in High Availability.	
	The HA traffic between two peers must be encrypted.	
	The proposed solution should support Link, device & Session failure.	
	The proposed solution should support automatic & manual synchronization between appliances in cluster.	
	Firewall	
	The proposed solution should be standalone appliance with hardened OS.	
	The proposed solution should be ICSA OR Webcoast checkmark certified firewall.	
	The proposed solution should support stateful inspection with user based one-to-one & dynamic NAT, PAT.	
	The proposed solution must support user identity as matching criteria along with Source/Destination IP/Subnet/group, destination Port in firewall rule.	
	The proposed solution should facilitate to apply unified threat policy like AV/AS, IPS, Content filtering, Bandwidth policy on firewall rule for ease of use, also unified threat controls must be applied on inter zone traffic.	
	The proposed solution should support user defined multi zone security architecture.	
	The proposed solution should have pre-defined application based on port/Signature & also support creation of custom application based on port/protocol number.	
	The proposed solution should support inbound NAT load balancing.	
	The proposed solution should support 802.1q VLAN tagging support.	
	The proposed solution should support dynamic routing like RIP1, RIP2, ISPF, BGP4.	
	The proposed system should provide alert message on Dash Board whenever non secure access is allowed & module subscription is expiring.	
	The proposed solution must be support IPv6 as per www.ipv6ready.org guidelines	

	The proposed solution must support 3G UMTS, GSM, GPRS modem via USB interface for VPN and Gateway Failover -Load Balancing.	
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	The proposed solution should support Fully Qualified Domain Name (FQDN) based host and host group.	
	The proposed solution should support Differentiated Services Code Point (DSCP)	
	IPS	
	The proposed solution should be NSS or webcoast checkmark certified.	
	The proposed solution should have signature based and protocol anomaly based Intrusion prevention system.	
	The proposed solution should have 3500+ signature database.	
	The proposed solution must support creation of custom IPS signature.	
	The proposed solution must support creation of multiple IPS policy for different zone instead of blanket policy at interface level.	
	The proposed solution must support configuration option to disable/enable category/signature to reduce the packet latency.	
	The proposed solution should give username along with IP in IPS alerts and reports.	
	The proposed solution should automatically takes update from update server.	
	The proposed solution must support blocking of anonymous open HTTP Proxy running on 80 port or any other port & also should support client based open proxy like Ultra surf. .	
	The proposed solution should able to detect & block known P2P based instant messaging application like Skype & known chat application like WLM, Rediffbol etc.	
	The proposed solution should generate the alerts for attacks	
	The proposed solution should generate historical reports based on top alerts, top attackers, severity wise, top victims, protocol wise.	
	Gateway Anti Virus	
	The proposed solution should have an integrated Anti Virus solution.	
	The proposed solution should have ICSA OR webcoast checkmark certification for Anti virus/Anti Spyware.	
	The proposed solution must work as SMTP proxy not as MTA or relay server.	
	The proposed solution should support scanning for SMTP, POP3, IMAP, FTP, HTTP, FTP over HTTP protocols.	
	The basic virus signature database of proposed solution should comprise complete wild list signatures and variants as well as malware like Phising, spyware.	
	The proposed solution should have facility to add signature/disclaimer in mails.	
	The proposed solution must support on appliance quarantined facility	
	The proposed solution should support blocking of dynamic/executable files based on file extension.	

	For SMTP traffic, the proposed solution should support following actions Block, Notify, Bounce back for infected, suspicious or protected attachments mails.	
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	The proposed solution should support multiple antivirus policy for sender/recipient email address or address group for notification setting, quarantine setting & file extension setting instead of single blanket policy	
	The proposed solution should update the signature database at a frequency of less than one hour & it should also support manual update.	
	For POP3 & IMAP traffic, the proposed system should strip the virus infected attachment & send notification to recipient & Admin.	
	The proposed solution should scan http traffic based on username, source/destination IP address or URL based regular expression.	
	The proposed solution should provide option to bypass scanning for specific HTTP traffic.	
	The proposed solution should support real mode & batch mode for HTTP virus scanning.	
	The proposed solution should provide historical reports based on username, IP address, Sender, Recipient & Virus Names.	
	Gateway Anti Spam	
	The proposed solution should have an integrated Anti Spam solution.	
	The proposed solution should have ICSA OR webcoast checkmark certification for Anti Spam.	
	The proposed solution should have configurable policy options to select what traffic to scan for spam.	
	The proposed solution should support spam scanning for SMTP, POP3, IMAP.	
	The proposed solution should support RBL database for spam detection.	
	The proposed solution must support mail archive option to keep copy of incoming & outgoing mails to administrator defined email address.	
	The proposed solution should have multiple configurable policy for email id/address group for quarantine setting, different actions instead of blanket policy.	
	The proposed solution must support on appliance quarantined facility	
	The proposed solution should support real time spam detection & also supports proactive virus detection technology which detects and blocks the new outbreaks immediately and accurately.	
	For SMTP traffic, the proposed solution support following actions Tag, Drop, Reject	
	The proposed solution should support IP/Email address white list/Black list facility.	
	The proposed solution should support option to enable/disable antispam scanning for SMTP authenticated traffic.	

	The proposed solution should support language independent spam detection functionality.	
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	The proposed solution should block image based spam mails i.e. email message with text embedded in a image file.	
	The proposed solution should provide historical reports based on username, IP address, Sender, Recipient & spam category.	
	Proxy Solution Web content filtering	
	The proposed solution should be integrated solution with local OR External database instead of querying to database hosted somewhere on the internet.	
	The proposed solution must work as Standalone HTTP proxy.	
	The proposed solution must have 80+ web category with 40 Million URL database.	
	The proposed solution must have following features inbuilt	
	a. Should able to block HTTPS based URLs with the help of Certificates.	
	b. Should able to block URL based on regular expression	
	c. Should support exclusion list based on regular expression	
	d. Must have support to block any HTTP Upload traffic.	
	e. Should able to block Google cached websites on based of category.	
	f. Should able to block website hosted on Akamai.	
	g. Should able to identify & block requests coming from behind proxy server on the base of username & IP address.	
	h. Should able to identify & block URL translation request.	
	The proposed solution should support application control blocking features as follows	
	a. Should able to block known Chat application like Yahoo, MSN, AOL, Google, Rediff, Jabber etc	
	b. Should support blocking of File transfer on known Chat application and FTP protocol.	
	The proposed solution must block HTTP or HTTPS based anonymous proxy request available on the internet.	
	The proposed solution should provide option to customize Access denied message for each category.	
	The proposed solution should be CIPA compliant	
	The proposed solution should have specific categories that would reduce employee productivity, bandwidth choking sites and malicious websites.	
	The proposed solution should able to generate reports based on username, IP address, URL, groups, categories & category type.	
	The proposed solution should support search criteria in reports to find the relevant data.	
	The proposed solution should support creation of internet access time policy for individual users or on group basis.	
	The proposed solution should have integrated bandwidth management.	
	The proposed solution should able to set guaranteed and burstable bandwidth per User/IP/Application on individual or shared basis.	

	The proposed solution should provide option to set different level of priority for critical application.	
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	The proposed solution should provide option to define different bandwidth for different schedule in a single policy & bandwidth should change as per schedule on the fly.	
	The proposed solution must provide logging and extensive controls on Instant Messaging (IM) traffic for Yahoo and MSN messengers	
	1. Log of chat sessions for all or specific set of users.	
	2. Rules to control allow or deny chat, voice, web cam and file transfer for specific ID or Group of IDs.	
	3. Achieve of transferred files.	
	4. Antivirus scanning on file transferred.	
	VPN	
	The proposed solution should be ICSA OR webcoast checkmark certified.	
	The proposed solution should support IPSec (Net-to-Net, Host-to-Host, Client-to-site), L2tp & PPTP VPN connection.	
	The proposed solution should support DES, 3DES, AES, Twofish, Blowfish, Serpent encryption algorithm.	
	The proposed solution should support Preshared keys & Digital certificate based authentication.	
	The proposed solution should support Main mode & Aggressive mode for phase 1 negotiation.	
	The proposed solution should support external certificate authorities.	
	The proposed solution should support export facility of Client-to-site configuration for hassle free VPN configuration in remote Laptop/Desktop.	
	The proposed solution should support commonly available IPSec VPN clients.	
	The proposed solution should support local certificate authority & should support create/renew/Delete self signed certificate.	
	The proposed solution should support VPN failover for redundancy purpose where more than one connection are in group & if one connection goes down it automatically switch over to another connection for zero downtime.	
	The proposed solution should have preloaded third party certificate authority including risign/Entrust.net/Microsoft and provide facility to upload any other certificate authority.	
	The proposed solution should support Threat free Ipsec/L2TP/PPTP VPN tunnel.	
	The proposed solution must provide on appliance SSL-VPN solution with Web Access (Clientless), Full Tunnel and Split Tunnel control. Solution should provide per user / group SSLVPN access (Must be free license for unlimited users)	
	SSL-VPN solution should be certified by ICSA OR VPNC for SSL Portal / FireFox Compatibility / Java Script / Basic and Advanced Network Extensions.	

	Logging & Reporting	
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	The proposed solution must have reporting solution.	
	The proposed solution should support minimum 100+ drill down reports.	
	The proposed solution should provide reports in HTML, CSV, PDF, Excel & graphical format.	
	The proposed solution should support logging of Antivirus, Antispam, content filtering, Traffic discovery, IPS, Firewall activity on syslog server.	
	The proposed solution should provides detailed reports for all files uploaded via HTTP or HTTPS protocol. The report should include username/IP address/URL/File name/Date and Time.	
	The proposed solution should provide data transfer reports on the based of application, username, Ip address.	
	The proposed solution should provide connection wise reports for user, source IP, destination IP, source port, destination port or protocol.	
	The proposed solution should have facility to send reports on mail address or on FTP server.	
	The proposed system solution provides approximate 45 regulatory compliance reports for SOX, HIPPA, PCI, FISMA and GLBA compliance.	
	The proposed solution should support Auditing facility to track all activity carried out Security appliance.	
	The proposed solution should support multiple syslog server for remote logging.	
	The proposed solution should forward logging information of all modules to syslog servers.	
	The proposed solution should have configurable option for email alerts/automated Report scheduling.	
	The proposed solution should be able to provide detailed reports about all mails passing through the firewall.	
	The proposed solution should provide reports for all blocked attempts done by users/IP address.	
	The proposed solution must be capable to derive logs and reports of proprietary devices including UTMs, Proxy Firewalls, Custom Applications and Syslog-compatible devices.	
	The proposed solution must be capable to provide Multiple Dashboard Report along with custom to customize the dashboards.	
	The proposed inbuilt reporting solution should be capable to do the forensic analysis to help organizations reconstruct the sequence of events that occurred at the time of security breach through iView logs and reports.	

Item No. 3.1 – 3 KVA On-line UPS for Central Network		
Sr. No.	Item	Qty.
3.1	General:	11
	3 KVA Online UPS (with 1 hour battery backup)	
	Online UPS with PWM Technology suitable for single Phase AC input voltage	
	UPS shall be housed in rugged enclosure made of M.S. Sheet 1.2 mm (minimum) thick, aesthetically finished, duly pretreated and powder coated.	
	UPS shall be free from workmanship defects, sharp edges, nicks, scratches, burs etc. All fasteners shall be fixed properly. The equipment shall be complete with all parts and all parts shall be functional	
	Enclosures shall conform to protection requirement of IP2L1 to ISI:3947 (Part 1)/1993 (reaffirmed 1998)	
	Bypass Switch	
	Manual and Static by-pass switch shall be provided for maintenance of UPS	
	UPS shall supply output power and charging current at the same time	
	Switching Device	
	Switching Device shall be IGBT	
	Switching frequency shall be 19 KHz or above	
	UPS shall be provided with serial communication port RS 232 for computer interface for data exchange of electrical parameters of UPS like voltage, current, frequency, charging status, mode of operation etc.	
	Rating	
	The rating specified is a unity power factor	
	INPUT	
	Voltage Range: 160V -260V	
	Frequency Range: 50Hz +/-10% Hz	
	Phase: Single Phase AC	
	OUTPUT	
	Voltage Regulation: 230 V +/-2Percent (with alternative setting for 220V +/-2Percent)	
	Output Frequency: 50 Hz +/-1 Hz Single Phase (In inverter mode)	
	Voltage Regulation: From on load to full load Should be within +/-1Percent in both the cases, UPS shall also have facility for operation in synchronous mode in which output frequency shall be same as that of mains frequency	
	Harmonic Distortion: 2% maximum on resistive load for 3 KVA	

	Efficiency
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	At rated Output voltage and Frequency Inverter: 90% (min.)
	Overall: 85% (min.)
	Power Factor
	Load power Factor: Better than 0.65 lagging
	UPS power factor: Better than 0.9 lagging
	Over load:
	UPS shall withstand 20% overload for 5 minutes and 50% overload for 1 minute
	ENVIROMENT
	Noise Level -less than 55 db at a distance of 1 meter
	Protection
	Over voltage, short circuit and overload at UPS output terminal, Under voltage at battery terminal, Overshoot and undershoot shall not be greater than 4% of rated voltage for duration of 60 msec
	Indicators Digital meters
	Mains Presence, Battery Charging and Discharging, Low battery voltage
	Input AC Voltage, Output AC Voltage, I/o Frequency, & O/p Frequency, Battery Voltage (with LED\LCD display)
	Battery Detail
	4800 VAH for 3 KVA -60 min
	Battery Type: Sealed Maintenance Free (VRLA)
	Battery Make: Exide/Quanta/CSB/Panasonic/ ROCKET (Battery Sr. No. on OEM Letter Head with Warranty Assurance of 1 year)
	Battery Housing: A suitable battery cabinet matching the UPS enclosures
Item No. 3.2 – 600 VA Line Interactive UPS	
Sr. No.	Item
3.2	General:
	Single Phase Input & Single Phase Output
	Line Interactive UPS with AVR & PWM Technology for computers suitable for single Phase AC input voltage
	UPS shall be housed in rugged enclosure made of M.S. Sheet 1.2 mm (minimum) thick, aesthetically finished, duly pretreated and powder coated or ABS body.
	UPS shall be free from workmanship defects, sharp edges, nicks, scratches, burs etc. All fasteners shall be fixed properly. The equipment shall be complete with all parts and all parts shall be functional

	Switching Device:
	Switching Device shall be MOSFET or IGBT
	Switching frequency shall be above 50 Hz
	Transfer time -Switching over time from AC mains to UPS mode on power failure shall be Max. 10 milliseconds
	Input -160 V – 280 V, 50 Hz +/-3 Hz , single phase AC
	Output
	AC Mode-AVR Output voltage in AC mode; 180-255 V ; 50 Hz +/-3 Hz
	Battery Mode-UPS Output voltage in battery mode; 230 V +/-10%, 50 Hz +/-3 Hz load power factor of not less than 0.6 lagging
	Overload-UPS shall withstand 5% overload
	Protections
	If input voltage goes outside the range 160V-280V, the system shall switch over to UPS mode
	Over Voltage, short circuit and overload at UPS output terminal, no load shut down. Cold start
	Under voltage at battery terminal, Battery over charge
	Indicators and meters
	Mains presence, UPS mode, Battery low, overload
	Battery details
	Battery Type-Sealed Maintenance Free (VRLA) Built-in
	Battery make-Exide/Quanta/CSB/Panasonic /Yuasa(Battery Sr. No on OEM Letter Head with Warranty Assurance of 1 years)
	Minimum Battery AH-600 VA UPS – 84 VAH – 15 minutes Battery Back Up
Item No. 4 – Data Servers	
Sr. No.	Item
4	Tower Cabinet
	2* Quad Core Intel Xeon L5506 processor 2.13 GHz, 4 MB L3 Cache, 4.8 GT/s QPI Link speed or higher
	Intel 5520 Series chipset or better on Intel or equivalent OEM motherboard having 4.8 GT/s QPI Link speed
	4GB DDR3 800 MHz Registered (RDIMM) memory upgradeable upto 192GB or more
	3*600 GB Hot Swappable SAS Hard Disk drive @ 10 k rpm
	Up 8 x 3.5" SATA or SAS HDDs Up to 16 x 2.5" SATA or SAS HDDs
	36/72GB DAT tape drive, with 50 Media (internal/external)
	Integrated SAS RAID Controller with 512 MB cache (4 x 6 Gb/s) with RAID 0, 1, 5, 10 support
	Dual Gigabit Ethernet Card

	Integrated Systems Management Processor OR Integrated BMC Controller
	Hot Swappable Power Supply, Fans and Hard Disk Drive
	On Bard Graphics on 16 MB video Memory
	4 USB Ports, keyboard and Mouse Port, 1 Serial Port,
	Internal DVD Writer 16 X Drive
	Redundant Power Supplies (Min 720 W 80 PLUS Gold)
	Power on Password (or Set Up Password) / Administrator Password / Unattended boot / Selectable boot sequence
	System Management to provide Monitoring health for Power Supply, Hard Disk, Memory,
	Pre failure alert on CPU, HDD and RAM
	Should be certified for Microsoft Windows, Red Hat Linux
	Windows Server 2008 Standard Preloaded with 25 Client License, Educational Edition, Academic Edition
	Microsoft Exchange Server 2008 Standard Academic Edition or higher
	OEM Standard Keyboard
	OEM Standard Mouse
	18.5" or higher wide screen LCD Monitor, dynamic contrast Ratio-10000:1 or better; Response Time 5 ms or better; Resolution 1366*768 or better, LCD Monitor Should be certified for TCO Displays 5.0
	Total PCI Slots : 5 -PCI / PCI X / PCI e Slots
Other Items	
Item No. 5. 1– Wireless Access Controller	
Sr. No.	Item
5.1	Port Configuration:
	24 # 10/100/1000T ports, RJ-45 console port
	Network Protocols:
	TCP/IP, IPX, NetBEUI
	Standards:
	IEEE802.3, IEEE 802.3u 10/100Base-Tx RJ-45, IEEE 802.3z 1000BaseX, IEEE 802.1d Spanning Tree, IEEE 802.1p Quality of Service, IEEE 802.1q VLAN, IEEE 802.1x Authentication, IEEE 802.11b, IEEE 802.11g, IEEE 802.11n, IEEE 802.11a, IEEE 802.11h, IEEE 802.11i Security, IEEE 802.11e Quality of Servicefor Wireless
	IPv4 Unicast and Multicast Features
	Static route, RIPv1/v2, OSPF, IGMP snooping
	IPv6 Features
	TCPv6, UDPv6, ICMPv6, Pingv6, TraceRTv6, Telnetv6, DNSv6, IPv6 ACL, IPv6 static route
	DHCP features:
	DHCP Server, DHCP Client, DHCP Relay

	Others:
	DNS Client, NTP (Server and Client), NAT, NAPT
	Security Features:
	WEP (WEP64/WEP128/WEP152), WPA-PSK, WPA2-PSK, WPA, WPA2, 802.1X authentication, PPPoE authentication, DoS attack control, Access control list, MAC-based Access control List, IP filtering
	Access point Management
	Wireless mode (802.11b/g/n), Seamless roaming, Manual or Auto Channel selection, Centralized Management of Access points and Wireless clients, Access point discovery with Static IP discovering, DHCP discovering, DNS discovering,
	Support up to 32 Access points Scalable and Upgradable up to 200 Access points without adding additional Controller or hardware
	Configure, maintain and management of Access points and clients
	Auto update of Software, Auto configuration and SNMP management for the access points
	WMM – Wireless multimedia Extension
	Management and Configuration:
	SNMP v1/v2/v3 Management Protocols, Web based Management, Console based Configuration, Syslog, User access via Telnet and SSH login, NTP
	Environment
	Operating Temperature of 0 deg. C – 55 deg. C
	Storage Temperature of -40 deg. C – 60 deg. C
	Operating Humidity of 5% -90 %
Item No. 5.2 – Wireless Access Point (In Door Access Point)	
Sr. No.	Item
5.2	Hardware specifications
	1 # 10/100/1000T Ethernet Port
	IEEE 802.11n, min 2 x 2 MIMO, 2 spatial streams Capable of 300 Mbps per radio. Dual Radio capable of being configured in 2.4 and 5 GHz. 10/100/1000 Mbps POE built-in port
	3 # SMA connectors for connecting up to 5dbi Antenna
	Standards:
	IEEE 802.11n, Backward compatible with IEEE 802.11b/g
	Frequency Range:
	2.4120GHz~2.4725GHz
	Transmit Power:
	100mW (20dBm)
	Software Features:

	VLAN as per IEEE 802.1Q
	Quality of service as per IEEE 802.11e WMM
	Minimum four level of priority queues, Traffic classifications, Traffic Limitations
	Multicasting support with IGMP snooping
	Rate limiting / Bandwidth Limitation
	Load balancing based on AP user traffic
	Seamless roaming support
	Minimum 16 Virtual Access point channels
	SSID hiding function
	Access point switch over function
	IPv6 ready
	Security Features:
	IEEE 802.1x Authentication
	MAC address Authentication
	MAC filtering
	Access control list
	WEP (WEP64, WEP128) encryption, WPA, 802.11i)
	Power supply:
	External power adapter
	Input power of Input: 110-240V AC and Output power of 12V DC, 1.5A
	Power consumption of max 9.9W
	Management Features:
	SNMP protocol, Telnet, SSH, HTTP / HTTPS, Local and Remote maintenance, Syslog, Alarm function
	Environment:
	Operating Temperature: 0 deg. C-50 deg. C
	Operating Humidity 5% -95% non-condensing
Item No. 5.3 – Wireless PCI Card	
Sr. No.	Item
5.3	Transmission of Speed 54 Mbps
	802.11n standards
	PCI 2.2
	Works on 2.4 GHz Frequency band
	Strong 64/128 bit WEP data encryption security
	Compatible with 802.11b/g/n products
	Advance security with WPA, 802.1x authentication, TKIP support
	Powerful antenna provides 100 m indoors 300m outdoor operation range
	External dipole antenna with detachable reverse SMA connector

Tools	
Item No. 6.1 – Impacting Tool	
Sr. No.	Item
6.1	Impacting Tool to Punch the Cat6 wire in patch panel and keystone jack with wire Removal tags
Sr. No.	Item
6.2	Crimping Tool to crimp the RJ45 Connectors with cat 6 wires Should be able to crimp RJ11 Connectors as well with wire cutter and stripper.
Sr. No.	Item
6.3	Battery Life:
	Typical Standby: 2.5 years
	Cable Testing: 20 hours
	Cable Types:
	Shielded or Unshielded, Cat 6, Cat 5e, Cat 5, Cat 4, or Cat 3
	Minimum Cable Length for Testing for Split Pairs:
	1 meter (3 feet)
	Maximum Cable Length for Testing:
	305 meters (1000 feet)
	Coax Cable:
	100 ohms maximum DC resistance, center conductor plus shield
	Indicators:
	LEDs for power, low battery and Cable wires.
Sr. No.	Item
7.1	Front doors of Toughened tinted glass
	Top cover with provision for fan try mounting
	Rear steel doors -with venting options
	Stationary and sliding shelves
	Front Section with glass door and lock

	Maximum load rating of 350 kgs
	600mm wide x 1000mm deep
	Side panel with slam latches
	Steel door and glass door trims powder coated
	Bottom cover with gland plate kit 1U Fan try, 4 fan position with 4 cooling fans,
	Two Vertical AC power Distribution boxes on back side
	AC Main channels
	Front and rear mounting angles

	Earth continuity kit
	With 8 cable managers
	With 5 cantilever shelves
	Keyboard tray sliding with mouse pad
	Caster with foot-operated brake
Item No. 7.2 -24 U Rack	
Sr. No.	Item
7.2	Rigid frame that can be fixed to the wall or the rack should be floor standing.
	Adjustable rails in the front and rear
	Top and Bottom cable entry facility
	Front Section with glass door and lock
	600mm wide x 500mm deep or more
	Steel cabinet powder coated light grey
	Steel door and glass door trims powder coated
	1U Fan try, 2 fan position, cooling fans,
	AC power Distribution box equipped with fuse and 2 x Five 5A Socket
	Front Panel mounting hardware
	Earth continuity kit
	With 5 cable manager
	With 3 Cantilever shelves
Item No. 7.3 – 12 U Rack	
Sr. No.	Item
7.3	Rigid frame that can be fixed to the wall
	Adjustable rails in the front and rear
	Top and Bottom cable entry facility
	Front Section with glass door and lock
	600mm wide x 500mm deep
	Steel cabinet powder coated light grey

	Steel door and glass door trims powder coated
	1U Fan try, 2 fan position, cooling fans,
	AC power Distribution box equipped with fuse and 2 x Five 5A Socket
	Front Panel mounting hardware
	Earth continuity kit
	With 5 cable manager
	With 3 Cantilever shelves
Item No. 7.4-9 U Rack	
Sr. No.	Item
7.4	Rigid frame that can be fixed to the wall

	Adjustable rails in the front and rear
	Top and Bottom cable entry facility
	Front Section with glass door and lock
	Two Section Rack with back frame wall mount and hinged with front Section, to facilitate arranging/managing the cables from back side as well.
	600mm wide x 500mm deep
	Steel cabinet powder coated light grey
	Steel door and glass door trims powder coated
	1U Fan try, 2 fan position, cooling fans,
	AC power Distribution box equipped with fuse and Five 5A Socket
	Front Panel mounting hardware
	Earth continuity kit With cable manager
UTP Components	
Item No. 8.1 -Cat-6 UTP 4Pr UTP CMR Cable -305 Meters Box	
Sr. No.	Item
8.1	General Specification:
	Standard Length : 305 Meters (1000 Feet)
	4 Pair Twisted Cable
	Tangle free cable pack in laminated corrugated box
	Support for Fast and Gigabit Ethernet, IEEE 802.3/5/12, Voice, ISDN, ATM 155 and 622 Mbps.
	Physical Specification :
	Conductor : 23 AWG Annealed bare solid copper
	Insulation : High Density Polyethylene
	Core Color : Pair 1 : White -Blue
	Pair 2 : White -Orange

	Pair 3 : White - Green			
	Pair 4 : White - Brown			
	Sheath : Fire Retardant PVC Compound (FRPVC)			
	Approx. Cable OD : 6.5 mm			
	Operating Environment : Indoor			
	Electrical Specification : (at 550 MHz)			
	Standards : TIA / EIA 568 B.2-1			
	Impedance : 100 +/- 15 ohm			
	UL listed & ETL verified			
Item No. 8.2 - Cat-6 UTP 4Pr. Patch Cord - 1 Meter				
Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
8.2	Should conform or exceed the EIA/TIA 568 B standards for CAT 6 Factory molded boots on RJ 45 plugs at both ends	6240		
	Compliance with Cat 6 standards of ISO/IEC 11801, EIA/TIA 568, EN50173 and UL, ETL			
	Length - 3 feet/1m			
Item No. 8.3 - Cat-6 UTP 4Pr. Patch Cord - 2 Meter				
Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
8.3	Should conform or exceed the EIA/TIA 568 B standards for CAT 6 Factory molded boots on RJ 45 plugs at both ends	6240		
	Compliance with Cat 6 standards of ISO/IEC 11801, EIA/TIA 568, EN50173 and UL, ETL			
	Length – 7 feet/2m			
Item No. 8.4 - Cat 6 UTP Surface Single Shutter outlet with I/O Module and back box				
Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
8.4	Angular Face plates with shutters	6240		
	Screw cap design for better looking fronts			
	Suitable for use with all RJ45 installations including CAT 5, CAT 5e and CAT6			
	RJ-45 sockets With Blanking spacer if required.			
	Single Gang			
	Molded PVC-U			

	Tough shatter resistant PVC			
	Designed for ease of use			
	Square in Size			
	Designed for ease of use			
	Uncluttered internal design			
	PCB based Cat 6 Keystone Jack			
	Spring Contact: 50u” gold over 100u” nickel			
	Should Support T568A/T568B wiring Standards			
Item No. 8.5 - Cat 6 UTP Shuttered Patch Panel 24 Port-Loaded with Cable Manager				
Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
8.5	Port Patch Panel With Rack Mount	328		
	RJ45 female ports on front - 110 type wire termination blocks on back.			
	Rack mountable			
	Compatible with 23 - 24 AWG solid Conductor UTP cable.			
	Should conform or exceed the EIA/TIA 568 B.2-1 standards for CAT6			
	Fully Compatible with Gigabit Ethernet.			
	Metallic high strength and 1RU height, Should have routing rings, ties, labeling strips for identification			
	Should have protection on each port to protect from dust ingress and such particles by having shutter or cap.			
Item no. 8.6 to 8.7- Other Components				
Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
8.6	1.5" Size PVC Cap on Casing with Accessories needs to be installed where ever required. (As per Actual Qty required at Site)	65338		
8.7	1.5" Size PVC Pipe with Accessories needs to be installed where ever required. (As per Actual Qty required at Site)	106333		
Fiber Components				
Item No. 9.1 – Single Mode Fiber Cable				
Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
9.1	6 core Fiber Cables to be supplied	16625		
	Single Mode Fiber to support 1310 nm and 1550 nm wavelengths, 9/125 micron,			
	Graded index, anti rodent, fiber Should be protected inside jelly filled loose tube armoring with acrylic coated good quality steel.			

	Should conform or exceed the EIA/TIA 455, EIA/TIA 568, ISO11801 and ICEA-640 standards for Fiber and cable performance specifications.			
	Attenuation : Not more than 0.38 dB/km at 1310 nm and 0.25 dB/km at 1550 nm			
	ECCS armor followed by a jacket of polyethylene. Over the armor, water blocking powder applied for water tight cable.			
	Aramid yarn as peripheral strength member, Steel rodseembedded in the outer jacket.			

Item No. 9.2 – Fiber SM-SC Couplers and Pigtail x				
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Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
9.2	2.5mm Zirconia Ferrule with 1 Meter length	984		
	Single Mode			
	Push pull mechanism			
	0.9mm Tight buffered fiber			
	Insertion Loss : 9/125 um 0.2 dB SM			

Item No. 9.3 – Fiber Patch Cord SC-LC Type 9/125 Single Mode Fiber				
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Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
9.3	SM SC / LC Fiber Patch Cord, 3M, Duplex, 9/125um	154		

Item No. 9.4 – 12 port RM LIU -LIU Loaded with adapter plate & (with Single Mode Adapters)				
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Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
9.4	Mode availability 12 Port Fiber Patch Panel	66		
	Rack mount with 1RU height			
	Made of powder coated steel.			
	Have slots on front panel to accommodate SC adapters			
	Should have two connector panels, each with 3 SM-SC adaptors -Loaded			
	Should have fiber management provision inside			
	Should have earthling lugs, splicing tray with sleeves, two set of moon cable routing and other accessories.			
	Panel cover Should be slide out for easy maintenance			
	Fiber SC Adaptors To be fitted in the Supplied LIU with Accessories			

Item No. 9.5 – 24 port RM LIU -LIU Loaded with adapter plate & (with Single Mode Adapters)				
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Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
9.5	Mode availability 24 Port Fiber Patch Panel	8		

	Rack mount with 1RU height			
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	Made of powder coated steel.			
	Have slots on front panel to accommodate SC adapters			
	Should have two connector panels, each with 6 SM-SC adaptors -Loaded			
	Should have fiber management provision inside			
	Should have splicing tray, two set of moon cable routing and other accessories.			
	Panel cover Should be slide out for easy maintenance			
	Fiber SC Adaptors To be fitted in the Supplied LIU with Accessories			
Item No. 9.6 to 9.8 -Other Components				
Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
9.6	32 MM ISI mark HDPE Pipe for Fiber Cable (As per Actual Qty Required at Site) (In mtrs.)	14000		
9.7	25mm Class B category ISI mark GI Pipe (As per Actual Qty Required at Site) (In mtrs.)	1130		
9.8	Route Marker (to be installed on fiber route with minimum Distance of 50 mtrs.)	419		
Service as per Actual				
Item No. 10.1 to 10.26 – Service as per Actual				
Sr. No.	Item	Qty.	Matched/ Not Matched	Deviation/ Remarks (If any)
10.1	Laying of 6 Core Single Mode Fiber Cable	16625		
10.2	Laying of HDPE pipe	14000		
10.3	Laying of GI Pipe -25mm	1130		
10.4	Fixing of LIUs	74		
10.5	Fiber Pigtails Splicing	984		
10.6	Fiber Core Testing Charges	984		
10.7	Soft Soil Digging & Refilling	11970		
10.8	Hard Soil / Rock digging & Refilling	1790		
10.9	Asphalt Cutting -RCC Cutting	1065		
10.10	Underground Boring	324		
10.11	Fixing of Route Marker	419		
10.12	Laying of PVC Conduits / cap on casing -1.5"	171667		
10.13	Laying of UTP Cable	299815		
10.14	Feruling , Labeling	12480		
10.15	Termination of Information Outlet	6240		
10.16	Termination of 24 Port Jack Panel	328		

10.17	Rack Installation with Patch cord Routing	156		
10.18	UTP Cable testing with Scanner	6240		
10.19	Site Certification	38		
10.20	Installation of Layer 3 Switch	8		
10.21	Installation of Layer 2 Switch	308		
10.22	Installation of Gateway Security Appliance	3		
10.23	Installation of Wireless Access Controller	23		
10.24	Full Time Resident Engineer during Warranty Period	3		